The Office Action asserts it would have been obvious to modify the binapthyl unit disclosed by Zhan to arrive at the claimed binapthyl unit. The only reasoning proffered by the Office Action in support of its assertions is that (1) such modifications would have been well within the scope of the skilled artisan at the time of the invention, and (2) Zhan teaches that the "electronic structures and photo- and electroluminescent (EL) properties of these polymers can be manipulated by simply varying the nature of the co-units in the polymeric chain." The Office Action concludes that it would been obvious to try different structural isomers.

MPEP 2143.01(IV) provides that "a mere statement that the claimed invention is within the capabilities of one of ordinary skill in the art is not sufficient by itself to establish *prima facie* obviousness." Also, it is well established, "[R]ejections on obviousness cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007) quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006).

Post-KSR case law establishes that the fact that a prior art compound is an isomer of the claimed compound is not sufficient on its own to support a *prima facie* case of obviousness:

> A known compound may suggest its homolog, analog, or isomer because such compounds often have similar properties and therefore chemists of ordinary skill would ordinarily contemplate making them to try to obtain compounds with improved properties.... [However,] it remains necessary to identify some reason that would have led a chemist to modify a known compound in a particular manner to establish *prima facie* obviousness of a new claimed compound.

Proctor & Gamble Co. v. Teva Pharms. USA, Inc., 566 F.3d 989, 995–96 (Fed. Cir. 2009), quoting *Takeda Chem. Indus., Ltd. v. Alphapharm Pty., Ltd.*, 492 F.3d 1350, 1356–57 (Fed. Cir. 2007).

Zhan teaching that the structure and properties can be manipulated by varying the nature of the co-units in the polymeric chain would not have "led a chemist to modify [Zhan's] compound in a particular manner," because Zhan provides no further guidance as to how to vary "the nature of the co-units" or what types of changes would produce which results. The Federal Circuit has instructed that it is an improper application of the "obvious to try" rationale where "what would have been 'obvious to try' would have been to vary all parameters or try each of numerous possible choices until one possibly arrived at a successful result, where the prior art gave either no indication of which parameters were critical or no direction as to which of many possible choices is likely to be successful." *In re Kubin*, 561 F.3d 1351 (Fed. Cir. 2009).

In addition to not providing direction as to what variations were likely to be successful, Zhan teaches that it was concerned with not "significantly increasing the steric interactions in the polymer backbone." Page 1606, 1st column. The claimed invention obtains the opposite effect, as explained below.

The binapthyl derivative structural units of the claimed EL polymer is bound, at each of its positions 2 and 2', to two different fluorine derivative structural units, and two naphthalene rings of the binapthyl derivative structural units are bound to each other at positions 1 and 1', whereby the amount of bending in the main chain of the EL polymer is made greater, and the distance between the fluorine derivative structural units and the naphthalene ring not directly bound thereto is made closer. This lowers the interaction between the fluorine derivative structural units on the main chain of the EL polymer that are close to each other. See Applicants' specification, paragraphs [0015] to [0017].

On the other hand, in the structure taught by Zhan, because a single bond between position 1 and position 1' of the unit can freely rotate, the amount of bend in the main chain of the polymer of Zhan is smaller and flatter than the bent structure in the presently claimed invention. This results in a heightening of the interaction between fluorine derivative structural units on the main chain of the EL polymers that are close to each other.

The original emission color of fluorines is blue. However, as the interaction between fluorine derivative structural units increases, the emission color of fluorine shifts from blue to green. As exhibited by the claimed invention, by lowering the interaction between the fluorine derivative structural units, the original blue emission color is made stronger. Only blue emission is observed in the emission spectrum of the organic EL device made from the EL polymer of Example 1. In contrast, the organic EL device made from the polymer of Comparative Example 1 exhibits a strong green emission, where the polymer consists of only fluorine derivative structural units without binapthyl derivative structural units (see paragraphs [0154]).

In addition, the fluorine derivative structural units are bound, at positions 2 and 7, to two different binapthyl derivative structural units (see Reaction Scheme of paragraph [0041]).

As discussed above, Zhan discloses the desirability of having a binapthyl derivative structural unit that has low steric hindrance. Because of this and because one of skill in the art would have considered that a binapthyl derivative structural unit having high steric hindrance would exhibit poor reactivity, it would not have been obvious to modify the structural unit taught by Zhan to have high steric hindrance as exhibited by the claimed polymers.

For at least the reasons discussed above, Zhan would not have rendered obvious claim 1. Claims 2–4, 8, and 9 depend from claim 1 and, thus, also would not have been

rendered obvious by Zhan. Reconsideration and withdrawal of the rejection are respectfully requested.

B. Zhan in view of Kim

The Office Action rejects claims 5–7 and 10–13 under 35 U.S.C. §103(a) over Zhan in view of U.S. Patent No. 5,876,864 to Kim et al. ("Kim"). Applicants respectfully traverse the rejection.

Claims 5–7 and 10–13 each depend from and require all of the limitations of claim 1. Despite the Office Action's assertions, Zhan and Kim would not have rendered obvious claim 1, let alone any of its dependent claims. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

II. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of the application are earnestly solicited.

Should the Examiner believe that anything further would be desirable to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,

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Date: October 13, 2009

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